INDEX

Acarlar, M. S. & Smith, C. R. A study of hairpin vortices in a laminar boundary layer. Part 1. Hairpin vortices generated by a hemisphere protuberence, 1–41

Acarlar, M. S. & Smith, C. R. A study of hairpin vortices in a laminar boundary layer. Part 2. Hairpin vortices generated by fluid injection, 43–83

Akylas, T. R. Unsteady and nonlinear effects near the cusp lines of the Kelvin ship-wave pattern, 333–342

Bernstein, L. & Ishaq, M. S. The laminar boundary layer on a flat plate in periodic sideslip, 511–535

Brady, J. F. & Durlofsky, L. On rotating disk flow, 363–394

Carnevale, G. F. & Frederiksen, J. S. Nonlinear stability and statistical mechanics of flow over topography, 157–181

Donnelly, R. J. *See* Pfotenhauer, Niemela & Donnelly

Durlofsky, L. *See* Brady & Durlofsky

Evans, D. V. & McIver, P. Resonant frequencies in a container with a vertical baffle, 295–307

Frederiksen, J. S. *See* Carnevale & Frederiksen

Haritonidis, J. H. *See* Johansson, Her & Haritonidis

Haynes, P. H. On the instability of sheared disturbances, 463–478

Her, J.-Y. *See* Johansson, Her & Haritonidis

Ishaq, M. S. *See* Bernstein & Ishaq

Jayaram, M., Taylor, M. W. & Smits, A. J. The response of a compressible turbulent boundary layer to short regions of concave surface curvature, 343–362

Johansson, A. V., Her, J.-Y. & Haritonidis, J. H. On the generation of high-amplitude wall-pressure peaks in turbulent boundary layers and spots, 119–142

Keller, J. B. *See* Vanden-Broeck & Keller

Kit, E. *See* Tsinober, Kit & Teitel

Kitoh, O. Swirling flow through a bend, 429–446

Lister, J. R. Long-wavelength instability of a line plume, 413–428

Liu, P. L.-F. *See* Zhou & Liu

Mason, P. J. & Morton, B. R. Trailing vortices in the wakes of surface-mounted obstacles, 247–293

McIver, P. *See* Evans & McIver

Miles, J. W. On surface-wave forcing by a circular disk, 97–108

Moin, P. *See* Moser & Moin

Morton, B. R. *See* Mason & Morton

Moser, R. D. & Moin, P. The effects of curvature in wall-bounded turbulent flows, 479–510

Mulligan, J. C. *See* Williams, Mulligan & Rhyne

Nakayama, A. Curvature and pressure-gradient effects on a small-defect wake, 215–246

Niemela, J. J. *See* Pfotenhauer, Niemela & Donnelly

INDEX

Acarlar, M. S. & Smith, C. R. A study of hairpin vortices in a laminar boundary layer. Part 1. Hairpin vortices generated by a hemisphere protuberence, 1–41

Acarlar, M. S. & Smith, C. R. A study of hairpin vortices in a laminar boundary layer. Part 2. Hairpin vortices generated by fluid injection, 43–83

Akylas, T. R. Unsteady and nonlinear effects near the cusp lines of the Kelvin ship-wave pattern, 333–342

Bernstein, L. & Ishaq, M. S. The laminar boundary layer on a flat plate in periodic sideslip, 511–535

Brady, J. F. & Durlofsky, L. On rotating disk flow, 363–394

Carnevale, G. F. & Frederiksen, J. S. Nonlinear stability and statistical mechanics of flow over topography, 157–181

Donnelly, R. J. *See* Pfotenhauer, Niemela & Donnelly

Durlofsky, L. *See* Brady & Durlofsky

Evans, D. V. & McIver, P. Resonant frequencies in a container with a vertical baffle, 295–307

Frederiksen, J. S. *See* Carnevale & Frederiksen

Haritonidis, J. H. *See* Johansson, Her & Haritonidis

Haynes, P. H. On the instability of sheared disturbances, 463–478

Her, J.-Y. *See* Johansson, Her & Haritonidis

Ishaq, M. S. *See* Bernstein & Ishaq

Jayaram, M., Taylor, M. W. & Smits, A. J. The response of a compressible turbulent boundary layer to short regions of concave surface curvature, 343–362

Johansson, A. V., Her, J.-Y. & Haritonidis, J. H. On the generation of high-amplitude wall-pressure peaks in turbulent boundary layers and spots, 119–142

Keller, J. B. *See* Vanden-Broeck & Keller

Kit, E. *See* Tsinober, Kit & Teitel

Kitoh, O. Swirling flow through a bend, 429–446

Lister, J. R. Long-wavelength instability of a line plume, 413–428

Liu, P. L.-F. *See* Zhou & Liu

Mason, P. J. & Morton, B. R. Trailing vortices in the wakes of surface-mounted obstacles, 247–293

McIver, P. *See* Evans & McIver

Miles, J. W. On surface-wave forcing by a circular disk, 97–108

Moin, P. *See* Moser & Moin

Morton, B. R. *See* Mason & Morton

Moser, R. D. & Moin, P. The effects of curvature in wall-bounded turbulent flows, 479–510

Mulligan, J. C. *See* Williams, Mulligan & Rhyne

Nakayama, A. Curvature and pressure-gradient effects on a small-defect wake, 215–246

Niemela, J. J. *See* Pfotenhauer, Niemela & Donnelly

Pfotenhauer, J. M., Niemela, J. J. & Donnelly, R. J. Stability and heat transfer of rotating cryogens. Part 3. Effects of finite cylindrical geometry and rotation on the onset of convection, 85–96

Popiolek, Z. *See* Yianneskis, Popiolek & Whitelaw

Reinelt, D. A. The rate at which a long bubble rises in a vertical tube, 557–565

Rhyne, T. B. *See* Williams, Mulligan & Rhyne

Sato, Y. & Yamamoto, K. Lagrangian measurement of fluid-particle motion in an isotropic turbulent field, 183–199

Smith, C. R. *See* Acarlar & Smith

Smith, J. On surface waves crossing a step with horizontal shear, 395–412

Smith, R. Diffusion in shear flows made easy: the Taylor limit, 201–214

Smits, A. J. *See* Jayaram, Taylor & Smits

Taylor, M. W. *See* Jayaram, Taylor & Smits

Teitel, M. *See* Tsinober, Kit & Teitel

Tsinober, A., Kit, E. & Teitel, M. On the relevance of the potential-difference method for turbulence measurements, 447–461

Vanden-Broeck, J.-M. & Keller, J. B. Free surface flow due to a skin, 109–117

Whitelaw, J. H. *See* Yianneskis, Popiolek & Whitelaw

Williams, J. C., Mulligan, J. C. & Rhyne, T. B. Semisimilar solutions for unsteady free-convective boundary-layer flow on a vertical flat plate, 309–322

Yamamoto, K. *See* Sato & Yamamoto

Yianneskis, M., Popiolek, Z. & Whitelaw, J. H. An experimental study of the steady and unsteady flow characteristics of stirred reactors, 537–555

Zhou, C. & Liu, P. L.-F. Second-order low-frequency wave forces on a vertical circular cylinder 143–155

Volume 175 February 1987

CONTENTS

A study of hairpin vortices in a laminar boundary layer. Part 1. Hairpin vortices generated by a hemisphere protuberence. M. S. Acarlar and C. R. Smith *page* 1

A study of hairpin vortices in a laminar boundary layer. Part 2. Hairpin vortices generated by fluid injection. M. S. Acarlar and C. R. Smith 43

Stability and heat transfer of rotating cryogens. Part 3. Effects of finite cylindrical geometry and rotation on the onset of convection. J. M. Pfotenhauer, J. J. Niemela and R. J. Donnelly 85

On surface-wave forcing by a circular disk. John W. Miles 97

Free surface flow due to a sink. Jean-Marc Vanden-Broeck and Joseph B. Keller 109

On the generation of high-amplitude wall-pressure peaks in turbulent boundary layers and spots. Arne V. Johansson, Jen-Yuan Her and Joseph H. Haritonidis 119

Second-order low-frequency wave forces on a vertical circular cylinder. Chinpu Zhou and Philip L.-F. Liu 143

Nonlinear stability and statistical mechanics of flow over topography. George F. Carnevale and Jorgen S. Frederiksen 157

Lagrangian measurement of fluid-particle motion in an isotropic turbulent field. Yukinari Sato and Kazuo Yamatomo 183

Diffusion in shear flows made easy: the Taylor limit. Ronald Smith 201

Curvature and pressure-gradient effects on a small-defect wake. A. Nakayama 215

Trailing vortices in the wakes of surface-mounted obstacles. P. J. Mason and B. R. Morton 247

Resonant frequencies in a container with a verticle baffle. D. V. Evans and P. McIver 295

Semisimilar solutions for unsteady free-convective boundary-layer flow on a vertical flat plate. J. C. Williams, J. C. Mulligan and T. B. Rhyne 309

Unsteady and nonlinear effects near the cusp lines of the Kelvin ship-wave pattern. T. R. Akylas 333

The response of a compressible turbulent boundary layer to short regions of concave surface curvature. Mohan Jayaram, Margaret W. Taylor and Alexander J. Smits 343

On rotating disk flow. John F. Brady and Louis Durlofsky 363

On surface waves crossing a step with horizontal shear. Jerome Smith 395

Long-wavelength instability of a line plume. JOHN R. LISTER 413

Swirling flow through a bend. OSAMI KITOH 429

On the relevance of the potential-difference method for turbulence measurements. A. TSINOBER, E. KIT and M. TEITEL 447

On the instability of sheared disturbances. PETER H. HAYNES 463

The effects of curvature in wall-bounded turbulent flows. ROBERT D. MOSER and PARVIZ MOIN 479

The laminar boundary layer on a flat plate in periodic sideslip. L. BERNSTEIN and M. S. ISHAQ 511

An experimental study of the steady and unsteady flow characteristics of stirred reactors. M. YIANNESKIS, Z. POPIOLEK and J. H. WHITELAW 537

The rate at which a long bubble rises in a vertical tube. D. A. REINELT 557

REVIEWS

SHORTER NOTICES 566

INDEX TO VOLUME 175 568